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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,153	10/11/2005	Joachim Charzinski	2002P13482WOUS	5278

7590 05/01/2009

Siemens Corporation
Intellectual Property Department
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EXAMINER	
NILANONT, YOUPAPORN	
ART UNIT	PAPER NUMBER
2446	

MAIL DATE	DELIVERY MODE
05/01/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,153	CHARZINSKI ET AL.	
	Examiner	Art Unit	
	YOUPAPORN NILANONT	2446	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *1-30-2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 January 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims:

Claims 18-33 are pending in this Office Action.

Claims 18-23, 25-26 and 28-33 are amended.

The objections to claims 18, 25-26, 28 and 33 are withdrawn in response to applicant's amendments

Response to Arguments

Applicant's arguments with filed in the amendment filed 1/30/2009 have been fully considered but are moot in view of the new ground(s) of rejection. The reasons set forth below.

Applicant's invention as claimed:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen et al. ("A Proposed Architecture for MPLS") in view of Rekhter (U.S. 5,917,820).

Regarding claim 18, Rosen teaches a method for routing of data packets (Rosen, page 4, 3rd paragraph and 4th paragraph) for avoiding circulation of the data packets (Rosen, page 20, 1st paragraph "list is used to prevent the formation of switched path loops"), in a packet-switched network, made up of routers (Rosen, page 4, 4th paragraph "subsequent hops"), which uses traffic distribution (page 41, section 3.2), the method comprising:

providing a routing table for each node in the packet-switched network for forwarding data packets through the packet-switched network, wherein each routing table comprises next hop data (Rosen, page 4, 4th paragraph "a table which specifies the next hop")

assigning a label to a data packet at an ingress node where the data packet enters the network (Rosen, page 4, 3rd paragraph "just once, as the packet enters the network ... encoded with a short fixed length value known as a 'label' ... the label is sent along with it"),

forwarding a the data packet from the ingress node to the egress node by an internal router of the packet-switched network by accessing the routing table for each node traversed in the packet-switched network, and reading the next hop data that coincides with the label (Rosen, page 4, 4th paragraph "subsequent hops", "label is used as an index into a table which specifies the next hop" and "forwarded to its next hop"); and

providing alternative routes for the forwarding of the data packet in the routing table when an alternate next hop is available (Rosen, page 43, section

3.4 "If an LSR supports multiple routes for a particular Stream, then it may assign multiple labels to the Stream, one for each route").

Rosen may not explicitly teach that its routing table has an entry for each pair of ingress/egress nodes where the data packet can enter and leave the packet-switched network respectively or that its label being used as an index into the routing table comprises data representing the ingress node and an egress node where the data packet will leave the packet-switched network. Therefore, Rosen may not explicitly teach that each packet contains a label that identifies the ingress and egress nodes of the packet and that the label is being used throughout the path to forward the packet to the egress node.

However, Rosen discloses that the label is based on the stream or forwarding equivalence class (Rosen, page 10, 1st paragraph of section 2.1). Rosen further discloses that the same packet entering the network at a different router can be labeled differently (Rosen, page 4, 6th paragraph). Therefore, Rosen's label represents ingress and egress node since packets in the same stream or forwarding equivalence class comes from the same node and travel to the same destination (Rosen, pages 3-4, 2nd paragraph of section 1.1 "set of packets belonging to the same FEC, traveling from a common node ... towards the destination"). Furthermore, Rosen discloses that the labels can be unique in a network which means that there is no label swapping within the domain of MPLS nodes or routers (Rosen, page 11 lines 1-5).

Conversely, Rekhter discloses that the local tag used as an index into a database of route information maybe associated with desired source and

destination addresses in order to provide level of source/destination address granularity (Rekhter, column 10 lines 10-20) if resource management in the network is needed.

It would have been obvious to the person having ordinary skill in the art, at the time the invention was made, to have clarified Rosen's label as representing both ingress and egress nodes as taught by Rekhter in order to provide resource management in the network and allocate certain resource to a certain pair of sender and receiver.

Regarding claim 19, Rosen and Rekhter references teaches the method according to Claim 18, further comprising:

providing the data packet at the ingress node with identification data (Rosen, page 4, 3rd paragraph "just once, as the packet enters the network ... encoded with a short fixed length value known as a 'label' ... the label is sent along with it") used by the internal router (Rosen, page 4, 4th paragraph "At subsequent hops", "label is used as an index into a table") to identify the ingress node and egress node (Rekhter, column 10 lines 10-20 "associate the local tags to desired source and/or destination addresses" and column 9 lines 26-34 "local tag 508 is associated with a destination address prefix").

Regarding claim 20, Rosen and Rekhter references teach the method according to Claim 19, wherein the identification data include an identifier or a network address for the ingress node and egress node (Rekhter, column 10 lines 10-20 "associate the local tags to desired source and/or destination addresses"

and column 9 lines 26-34 "local tag 508 is associated with a destination address prefix").

Regarding claim 21, Rosen and Rekhter references teaches the method according to Claim 20, wherein

at the ingress node the data packet is supplied with a data field, and wherein (Rosen, page 4, 3rd paragraph "label", page 7 "MPLS label" and "shim header")

the internal router takes from the data field the data about the ingress node at which the packet entered the packet-switched network and the data about its egress node (Rosen, page 4, 4th paragraph "At subsequent hops", "label is used as an index into a table", Rekhter, column 9 lines 3-9 and column 10 lines 10-20).

Regarding claim 22, Rosen and Rekhter references teach the method according to Claim 21, wherein the data packet is supplied with a data field (Rosen, page 4, 3rd paragraph "label", page 7 "MPLS label" and "shim header" and section 2.3 on page 11 "encapsulation"), wherein

the data field is added onto the data packet as a header or a trailer (Rosen, page 7 "MPLS label" and "shim header" and section 2.21.1 on page 33 "shim"), and wherein

the data field includes an identifier for the ingress node and the egress node (Rekhter, column 9 lines 3-9 and column 10 lines 10-20).

Regarding claim 25, Rosen and Rekhter references teach the method according to Claim 22, wherein at the ingress node, the data packet is supplied

with at least one data field (Rosen, bottom half of page 17, "'LSP Ingress', pushes a label"), and wherein this data field is removed at the egress node (Rosen, page 39 last paragraph "the LSP Egress … pop the stack").

Regarding claim 26, Rosen and Rekhter references teach the method according to Claim 21, wherein at least one data field is provided by a Multiprotocol Label Switching label (Rosen, page 7 "MPLS label").

Regarding claim 27, Rosen and Rekhter references teach the method according to Claim 20, wherein the identification data is written into a field provided as part of the format for the data packet (Rosen, page 11, section 2.3 "placing the label in an available location in … headers").

Regarding claim 28, Rosen and Rekhter references teach the method according to Claim 18, wherein the egress node is referenced by an identifier (Rosen, mid-page of page 15 "level m-k label"), wherein

> the identifier of the egress node is determined by reference to a network address in the network, to which the data packet is to be forwarded after it has traversed the packet-switched network (Rosen, page 45, numeral 3 "b)"), and wherein
>
> the determination of the identifier of the egress node is carried out at the ingress node by reference to the network address, using a table (see Rosen, page 45, numeral 3 "Suppose that …").

Regarding claim 29, Rosen and Rekhter teaches the method according to Claim 18, further comprising:

supplying the data packet at the ingress node with an identification data used by the internal router for identifying the ingress node (Rosen, page 4 3rd paragraph "as the packet enters the network" and label, 6th paragraph "packet that enters the network at a particular router can be labeled differently ..."),

wherein the identification data include an identifier or a network address for the ingress node (Rekhter, column 10 lines 13-14 "associate the local tags to desired source and/or destination addresses"); and

determining the data about the egress node interface by the internal router by using address data extracted from the data packet (Rosen, page 14, 3rd paragraph "In order to forward an unlabeled packet ...").

Regarding claim 30, Rosen and Rekhter references teaches the method according to Claim 18, wherein the internal router determines the data about the ingress node and the data about the egress node by using address data extracted from the data packet.

Regarding claim 31, Rosen and Rekhter references teach the method according to Claim 18, wherein the routing table assigns the data about the ingress node at which the data packet entered the packet-switched network and the data about the egress node (Rosen, page 37, section 3.1.2.2, 1st five lines of page 11 and Rekhter, column 9 lines 26-29 and column 10-14) to a network address for the next hop (Rekhter, column 9 lines 35-40 "remote tags 510 are tags that are local to neighboring node identified by the MAC address").

Regarding claim 32, Rosen and Rekhter references teach the method according to Claim 18, further comprising:

supplying the data packet at the ingress node with a data field for identifying the flow (Rosen, page 11 section 2.3, 3rd paragraph of page 4); and

performing the forwarding of the data packet by the internal router according to the data field (Rosen, page 14 section 2.10 "forward a labeled packet…examines the label").

Regarding claim 33, Rosen teaches an internal router in a packet-switched network for performing a method for routing of data packets for avoiding circulation of the data packets (Rosen, page 4, 3rd paragraph and 4th paragraph, page 20, 1st paragraph "prevent the formation of switched path loops"), in a packet- switched network, made up of routers (Rosen, page 4, 4th paragraph "subsequent hops"), which uses traffic distribution (page 41, section 3.2), comprising:

a routing table stored for each node in the packet-switched network for forwarding data packets through the packet-switched network, wherein each routing table comprises next hop data (Rosen, page 4, 4th paragraph "a table which specifies the next hop");

wherein the internal router:

assigns a label to a data packet at an ingress node where the data packet enters the network (Rosen, page 4, 3rd paragraph "just once, as the packet enters the network … encoded with a short fixed length value known as a 'label' … the label is sent along with it");

forwards the data packet from the ingress node to the egress node by accessing the routing table for each node traversed in the packet-switched network, and reading the next hop data (Rosen, page 4, 4th paragraph "subsequent hops", "label is used as an index into a table which specifies the next hop" and "forwarded to its next hop"); and

provides alternative routes for the forwarding of the data packet in the routing table when an alternate next hop is available (Rosen, page 43, section 3.4 "If an LSR supports multiple routes for a particular Stream, then it may assign multiple labels to the Stream, one for each route").

Rosen may not explicitly teach that its routing table has an entry for each pair of ingress/egress nodes where the data packet can enter and leave the packet-switched network respectively or that its label being used as an index into the routing table comprises data representing the ingress node and an egress node where the data packet will leave the packet-switched network. Therefore, Rosen may not explicitly teach that each packet contains a label that identifies the ingress and egress nodes of the packet and that the label is being used throughout the path to forward the packet to the egress node.

However, Rosen discloses that the label is based on the stream or forwarding equivalence class (Rosen, page 10, 1st paragraph of section 2.1). Rosen further discloses that the same packet entering the network at a different router can be labeled differently (Rosen, page 4, 6th paragraph). Therefore, Rosen's label represents ingress and egress node since packets in the same stream or forwarding equivalence class comes from the same node and travel to

the same destination (Rosen, pages 3-4, 2nd paragraph of section 1.1 "set of packets belonging to the same FEC, traveling from a common node ... towards the destination"). Furthermore, Rosen discloses that the labels can be unique in a network which means that there is no label swapping within the domain of MPLS nodes or routers (Rosen, page 11 lines 1-5).

Conversely, Rekhter discloses that the local tag used as an index into a database of route information maybe associated with desired source and destination addresses in order to provide level of source/destination address granularity (Rekhter, column 10 lines 10-20) if resource management in the network is needed.

It would have been obvious to the person having ordinary skill in the art, at the time the invention was made, to have clarified Rosen's label as representing both ingress and egress nodes as taught by Rekhter in order to provide resource management in the network and allocate certain resource to a certain pair of sender and receiver.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen et al. ("A Proposed Architecture for MPLS") in view of Rekhter (U.S. 5,917,820) as applied to claims 18-21 above, and further in view of Teraslinna (U.S. 5,623,492).

Regarding claim 23, Rosen and Rekhter references teach the method according to Claim 21.

Rosen and Rekhter may not teach that the data packet is supplied with two data field, wherein each of the data fields is added to the data packet as a header or a trailer, wherein one of the data fields includes an identifier for the ingress node and the other data field includes an identifier for the egress node.

However, Teraslinna discloses a method that supplies a packet with an address field which contains a source label and a destination label which are added as a trailer (Teraslinna, column 4 lines 30-38 and figure 2a) wherein both labels are used in routing the packet to identify source endpoint and destination endpoint (Teraslinna, column 5 lines 39-43).

It would have been obvious to the person having ordinary skill in the art, at the time the invention was made, to have used Teraslinna's disclosure of two labels in the modified Rosen's labeled packet in order to reduce the number of different identifiers used in the whole intra-domain network. Since identifiers are not assigned to each different pair but each different ingress/egress node therefore, routing table needs to contain only as many label as there are ingress and egress nodes in the domain.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen et al. ("A Proposed Architecture for MPLS") in view of Rekhter (U.S. 5,917,820) as applied to claims 18-22 above, and further in view of Cisco ("Cisco AVVID Network Infrastructure Enterprise Quality of Service Design").

Regarding claim 24, Rosen and Rekhter references teach the method according to Claim 22 but may not teach wherein a bit sequence is appended to or prefixed to at least one data field, identifying the data field as such.

On the other hand, Cisco reference shows the precise structure of a data packet in MPLS enabled system. The Cisco reference shows how the stack of labels, which can be used to identify nodes in the MPLS network, is placed in between the Frame Header and the IP Header and how the label is indicated as a label instead of an IP header (Cisco, bottom of page 6-3, "the bottom of stack bit indicates whether the next header is another label or ...").

It would have been obvious to the person having ordinary skill in the art, at the time the invention was made, to have used the specific description of the Cisco reference to specify how the LSR routers in Rosen reference are able to indicate that the header is an MPLS label or an IP header.

REMARKS

Applicant has presented amendments to the independent claims and some dependent claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Srivastava discloses a method of routing data through load-balancing nodes using MPLS labels.

Fotedar et al. discloses a method and an apparatus of forwarding Ethernet frame using a network-unique MPLS label or a VLAN Id attached to the frame.

Furuno discloses an edge device at an entrance of an MPLS domain that extracts a packet's label assigned by user and replaces it with a destination label before forwarding it to the neighboring node.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOUPAPORN NILANONT whose telephone

number is (571) 270-5655. The examiner can normally be reached on Monday through Thursday and alternate Friday at 8:30 AM - 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey C. Pwu can be reached on (571) 272-6798. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. N./
Examiner, Art Unit 2446
4-29-2009

/Jeffrey Pwu/
Supervisory Patent Examiner, Art Unit 2446